Science Committee Recommendations to NAC Plenary

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Re-Connecting with the Science Community

- Two basic sources of input
  - NRC/SSB
    - Report on FY07 Science budget released in May
  - NAC Subcommittees

- Re-establishes the two pathways for community advice that have served NASA so well since the Space Act was passed

May 3-4 Science Planning Conference

- Administrator Griffin support for considering changes in mix within each science area is very positive
- This conference was a beginning, not the end
  - Subcommittees did not reach conclusions about offsets
  - Various reasons offered:
    - First meeting of new Subcommittees
    - Discussion inhibited by interpretation of conflict-of-interest rules (esp. in Planetary Science Subcommittee)
- It is NASA SMD's responsibility to make decisions in any case, and should do so with close interaction with the NAC Science Committee, Subcommittees, and the NRC
- The Subcommittees did arrive at a set of common views on key issues (see handout)

Subcommittee Common Areas of Recommendation

- Endorsement of SSB report
- Restoration of R&A, esp. Astrobiology
- Near-term investment in technology
- Balance among large and small missions in each area over a decadal timescale
- Stability in programs
- Constraining mission costs

Science Committee Recommendations on R&A / Program Mix in FY07 Budget

- **Given common views of SSB and Subcommittees, the Science Committee believes 'no action' is not at option, even given lack of consensus on offsets.**
- **There are key milestones ahead at which guidance provided by the Subcommittees and SC can be implemented**
  - **No specific recommendation for change in FY06 (impractical due to schedule; too late in FY)**
    - **NASA should avail itself of opportunities to make adjustments in accord with Subcommittees' common recommendations**
  - **Revisit FY07 after budget is passed on the Hill as NASA prepares its initial Operating Plan**
  - **In formulating the FY08 budget, use the attached "Common Recommendations from the NAC Science Subcommittees"**
  - **Address these issues in the forthcoming Science Plan**

Science Plan

- Required both as an SMD strategic plan and as a response to Congress
- Draft to be reviewed in July and Fall meetings
- Outline and basic form of plan is sound; the draft should be developed using the following guidelines:
  - In each area, define key scientific questions
  - The Plan should define reasonable progress in each area by 2016
  - While the means will differ from question to question, each area should describe the roles of major project elements (R&A, technology, large and small missions, etc)
  - Use OMB budget guidelines as the financial envelop to:
    - Define missions and specific programs
    - Define S&T investments that need to be made now to enable a robust set of program/mission options in 2011
  - Use this planning exercise to inform FY08 budget formulation

Rising Cost of Scientific Programs

- Reviewed results of external assessments of JWST - significant cost growth
- Project under-costed and under-bid
- JWST and HST threaten the stability of other Astrophysics projects
- Extraordinary financial vigilance is required not only to maintain projects but also to maintain the intellectual integrity and stability of the entire Astrophysics program
  - Requires financial tools for decision support

Rising Cost of Scientific Missions

Science Committee Recommendations:

- **SMD should undertake a study of cost drivers of large missions, especially with regard to process and procedures, to determine how much cost they contribute**

- **SMD should assess the stability of the program in terms of an optimal portfolio of flagship, medium, and small missions**

- **SMD should define different levels of processes and procedures for small, medium and large mission classes**
  - **Emphasize flexibility in small missions - accept some increased in perceived risk**

Astrobiology

- These scientific investigations support NASA's strategic goals. In addition, this program is particularly attractive to the broader science community and the general public.

- **Science Committee recommendation**: NASA's Astrobiology program should have been be treated in the same way as any other R&A program, and should be in future planning.

Common Recommendations from the NAC Science Subcommittees

NRC Report:

- The NAC Science Subcommittees universally endorse the recommendations of the NRC Report "An Assessment of Balance in NASA's Science Programs" released May 4, 2006.

R&A:

- Restoration of R&A, at least in part, including Mission Data Analysis, and its maintenance over the years is a high priority. Heliophysics indicated the least need for restoration, and perhaps Planetary indicated the most need for restoration. Cuts to Astrobiology are particularly damaging and should receive immediate attention. Without scientists, there are no science missions. R&A supports the community that conceives missions, works with engineers to develop and operate missions, and produces discoveries from mission data.

Technology Development:

- Near-term investment in technology development is critical to the future of science missions. Sufficient resources should be invested in concept studies and in Phase A technology development in each science division for the future missions in their Decadal plans.

Mission Balance:

- Effective scientific exploration of space requires both large and small missions. There should be a balance of large, medium, and small missions specific in each science division over the decadal time scale.

- Opportunities for small, community-led missions need to be preserved. The Explorer line has been particularly hard hit and needs restoration.

Stability:

- The stability of the science program needs to be restored in order to properly plan for the future. Erosion of research and technology programs, mission cancellations, and mission delays must be avoided. Scientifically productive missions currently in operation should be extended.

Mission Cost:

- Costs for missions in development have been escalating to alarming levels. NASA should investigate and mitigate this problem. Large percentage increases, particularly for flagship missions, raise havoc with maintaining balance in the program.